SURREBUTTAL TESTIMONY

OF

JOSEPH M. LYNCH

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2017-207-E, 2017-305-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT POSITION WITH SOUTH CAROLINA ELECTRIC & GAS COMPANY ("SCE&G" OR THE "COMPANY").

A. My name is Joseph M. Lynch and my business address is 220 Operation Way, Cayce, South Carolina. My current position with the Company is Manager of Resource Planning.

Q. ARE YOU THE SAME JOSEPH LYNCH WHO PREVIOUSLY FILED DIRECT TESTIMONY AND REBUTTAL TESTIMONY IN THIS DOCKET?

A. Yes. Most recently, I submitted pre-filed rebuttal testimony in Docket No. 2017-370-E, which has been consolidated with these dockets for hearing purposes. Because that testimony addressed many of the issues raised here, I have attached that pre-filed testimony as Exhibit No.__(JML-1) to this testimony and incorporated by reference that testimony into my pre-filed surrebuttal testimony in these dockets.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

I am responding to certain statements made by Dr. Mark Cooper on behalf of Friends of the Earth and the Sierra Club in his rebuttal testimony.

Q. REGARDING DR. COOPER'S TESTIMONY IN 2012, DR. COOPER STATES THAT SCE&G RESPONDED WITH AN "ELEVENTH-HOUR ECONOMIC ANALYSIS" THAT USES "'MYOPIC, TOOTH FAIRY' ECONOMICS." IS THAT AN APPROPRIATE ASSESSMENT?

A. No, it is not. Rather, SCE&G's economic analysis was based on a methodology and approach that is extensively used and well-accepted in the utility industry. The inputs used were clearly explained and based on well-documented sources. There is nothing to justify Dr. Cooper's reference to these as "tooth fairy economics." Dr. Cooper appeared as witness in the 2012 proceeding and had ample opportunity to present his arguments to the Commission. They were simply not convincing and the Commission did not accept them.

In addition, SCE&G prefiled its 2012 study in response to Dr. Cooper's testimony as a supplemental exhibit before the hearing and in time for the Sierra Club to conduct discovery and for Dr. Cooper to offer supplemental sur-rebuttal testimony. As I discuss in my direct testimony, under the BLRA, the prudency of the NND project is not required to be re-litigated once a BLRA order is issued. Dr. Cooper's testimony was an effort to re-litigate the prudency, and the Company was surprised by this testimony. Since the re-litigation issue had not come up before, the Company was not sure how the Commission would interpret the

BLRA, nor did the Company know how the South Carolina Supreme Court would consider the issue. In the end, however, the Commission stated – in Order No. 2012-884 – that, "while this finding is justified by the evidence, this Commission also finds that the BLRA does not require that this issue be relitigated once the initial finding has been made." When the Commission's order was appealed to the South Carolina Supreme Court, the Court upheld the Commission's decision.

Q. DR. COOPER CLAIMS THAT "SANTEE COOPER'S DISSATISFACTION WITH THE PROJECT AND THE TROUBLING BIND IN WHICH IT FOUND ITSELF ARE INSTRUCTIVE FOR THE ANALYSIS OF IMPRUDENCE..." DO YOU AGREE?

A. No, I do not. Santee Cooper signed the EPC contract on May 23, 2008, giving it a 45% share of the NND Project, which amounted to about 1,005 MWs. In September of 2009, Santee Cooper signed documents with Central Electric Cooperative, allowing five upstate cooperatives to buy power from another provider. This resulted in the loss of about 1,000 MWs of load to Santee Cooper. In its 2009 Integrated Resource Plan ("IRP") before this loss, Santee Cooper projected a summer peak demand of 6,459 MWs in 2019. In its 2010 IRP which reflected this loss of demand, the peak demand forecast was 5,276 MWs, which represents a decrease of 1,183 MWs.[1] As a result, Santee Cooper's 2010 IRP shows reserve margins in 2019 of ***53% summer*** and ***39% winter*** for its system, compared to their target reserve margin of 13% summer and 10% winter. In the

[1] Santee Cooper's 2009 and 2010 IRPs are available online at http://www.energy.sc.gov/node/3048.

2009 IRP, the forecasted reserve margins for 2019 were 22% summer and 17% winter, a high but much more reasonable reserve level. The 2009 decision to release approximately 1,000 MW of load eliminated the need for the nuclear capacity and was likely motivation for Santee Cooper to find a buyer for some of its nuclear capacity.

Q. DO YOU AGREE WITH DR. COOPER THAT THE COMMISSION WOULD HAVE ACTED DIFFERENTLY IN 2012 OR 2015 OR 2016 HAD IT KNOWN WHAT IT KNOWS NOW?

A. No, and Dr. Cooper statement is speculation, and it only makes sense with the benefit of hindsight.

For example, in the 2015 study, the most likely scenarios indicated that it would take an increase of approximately $3 billion in the capital cost of the Units to make them uneconomical. The issues that Dr. Cooper seems to think would have caused the Commission to change its thinking about the Units would not have been sufficient to overcome that level of benefit to customers. What changed in 2017 was that, because of the Westinghouse bankruptcy and Westinghouse's refusal to honor the EPC Contract, SCE&G was able to collect the Toshiba guarantee payment, avoid termination and cancellation charges under the EPC Contract, and have a strong case for claiming an abandonment tax deduction. SCE&G also lost the cost protections it had negotiated in the EPC Contract. These factors, along with the unexpected opportunity to replace 540 MW of capacity with no charge to customers, changed the analysis. The 2017 analysis shows a much closer question as to the economics of continuing the project than had been shown before, particularly if Santee Cooper had not suspended funding. But even in 2017, continuing the project remained a close question as far as the economic analyses were concerned. Dr. Cooper is factually wrong when he says that changes in the earlier analyses of the sort he relies on would have resulted in a material change in those earlier studies.

However, if hindsight is the standard, I would point out that one must also consider that had the Commission known – in 2012 and 2015 – that the Company and Westinghouse would sign a fixed price contract in October of 2015, in which Westinghouse assumed virtually all the cost risk, abandoning the NND Project in 2012 or 2015 would have clearly been a bad economic decision at that time.

Q. DR. COOPER AGAIN BRINGS UP THE SUBJECT OF NATURAL GAS PRICES AND ARGUES THAT THE UTILITY WAS "UNDULY PESSIMISTIC ABOUT THE FUTURE COST OF GAS." AGAIN, IS THAT CORRECT?

A. No, that statement is not correct. All of SCE&G's economic studies relied on a range of future gas prices and pointed out how that range related to EIA's price forecast. All of these price forecasts were well documented and reflected a range of potential gas prices that were recognized in the industry as probable and appropriate for modeling. Dr. Cooper's criticisms are pure hindsight. As pointed out in prior dockets, since at least 2009, the Sierra Club has been trying to shut down fracking which would have resulted in markedly higher gas prices had they been successful.

SCE&G does not know where gas prices will be in the future (and neither does Dr. Cooper). With the advent of fracking a few years ago, the supply of gas to the market has increased significantly, thereby lowering its price. But with a lower price comes an increase in demand that will put upward pressure on the price. Also, we read that frackers are drawing natural gas from the "sweet spot" in their plays, but, as they move production away from this "sweet spot," the cost of production will increase. On the other hand, we read that fracking techniques have improved, thereby increasing production at a lower cost. The cost of transporting the gas is increasing dramatically as well. New pipeline infrastructure can result in a doubling of transportation costs and the FERC timeline for approving new pipelines is extended. There is also the international market to consider. As more Liquefied Natural Gas facilities are built in the U.S., and more gas is shipped overseas, the international price of natural gas—which is 3 to 4 times higher than the domestic price—will put upward pressure on the domestic price. Where prices end up as a result of the interplay of these factors is uncertain at best, and this does not even include the impact of possible future CO_2 regulations. So Dr. Cooper has no more basis to say that current gas price forecasts, which are low, will necessarily prove to be more accurate in the coming decades than earlier gas price forecasts, which were much higher. We simply don't know. However, system planning must be based on reasonable range of gas price forecasts as they exist when the planning is done, which is what SCE&G has done.

Q. HOW WILL CO_2 REGULATIONS AFFECT THE PRICE OF NATURAL GAS?

A. Energy fuels like natural gas are typically measured in terms of millions of British Thermal Units ("MMBTU"). For example, on October 26, 2018, the NYMEX Futures price for natural gas in the prompt month of November was \$3.185 per MMBTU. When an MMBTU of natural gas is burned, it emits 117 lbs. of CO2. The last estimate of the social cost of carbon under the Obama administration was \$54 per metric tonne of CO_2 in 2020, increasing at a rate of about 3.9%. A \$54 carbon tax would increase the price of burning natural gas by \$2.872, resulting in an equivalent NYMEX price of \$6.057 per MMBTU, not quite doubling of the base price.

Q. COULD THE PRICE OF CO_2 EMISSIONS BE LOWER THAN \$54 IN 2020?

A. Yes, it could be lower or higher. But as a point of reference, a recent report by the United Nations Intergovernmental Panel on Climate Change ("UNIPCC"), which was released on October 8, 2018, suggests that the price of CO_2 emissions would have to be in the range of \$135 and \$5,500 per metric tonne by 2030. That would add a CO_2 cost to the price of burning natural gas in the range of (\$7.180-\$292.500) per MMBTU before adding in the base price of gas. This is a very wide range.

Q. ISN'T A CO_2 EMISSION COST OF $5,500 PER TON UNREASONABLY HIGH?

A. I certainly hope so, but it is a little disconcerting that the UNIPCC doesn't think it too high to publish in its report.

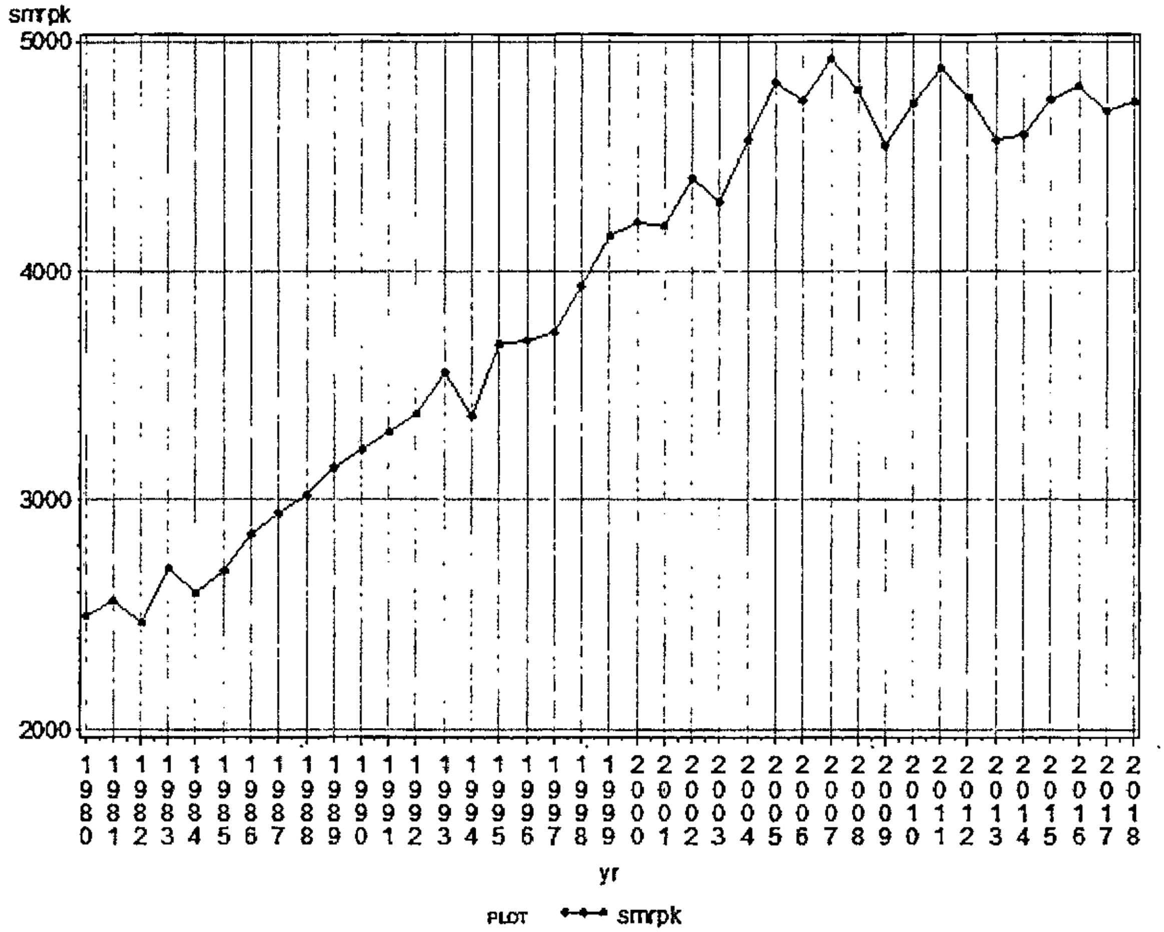
Q. DR. COOPER QUOTES THE CHAIRMAN OF EXELON SAYING IN MARCH OF 2012 THAT "NUCLEAR POWER IS NO LONGER AN ECONOMICALLY VIABLE SOURCE OF NEW ENERGY." HOW DO YOU RESPOND?

A. SCE&G demonstrated the economics of beginning the NND Project in 2008 and of continuing construction in 2012, 2015 and especially in 2016 with the inclusion of the Fixed Price Contract. I would also point out that Duke Energy had new nuclear units in its 2016 IRP.

Q. DR. COOPER AGAIN BRINGS UP SCE&G'S DEMAND FORECASTS AND CLAIMS THAT "LYNCH'S DEMAND FORECAST IS SIMPLY INDEFENSIBLE WHEN CONFRONTED WITH REALITY." DO YOU AGREE?

A. No, I do not agree. SCE&G uses forecasting techniques that are widely accepted in the industry and puts a considerable effort in making the best forecast it can based on the information available at the time. Criticisms based on hindsight like Dr. Cooper's are easy to make, but are simply not valid. For example, Figure 1 is a graph of SCE&G's historical summer peak demands from 1980 through 2018.

Figure 1—Summer Peak Demands



Notice that the peak demands are almost continuously growing until 2007 when the "Great Recession" hit. In 2007, it would be unreasonable to ignore 27 years of growth and forecast no growth over the subsequent 10 years. Dr. Cooper points out that the analysis in 2007 was wrong, but while it is easy to look back, it is altogether another matter to try to look forward. Because SCE&G must have the capacity to serve future demands, it cannot simply keep the peak demand forecast flat. SCE&G will analyze all the information available to it and make the best forecast it can.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Exhibit__(JML-1) to Surrebuttal Testimony

REBUTTAL TESTIMONY OF

JOSEPH M. LYNCH

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2017-370-E

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Joseph M. Lynch, and my business address is 220 Operation Way, Cayce, South Carolina.

Q. HAVE YOU PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I have.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to address claims made by Mr. Norman Richardson on behalf of the ORS suggesting that SCE&G's economic analyses of 2015, 2016 and 2017 are flawed and should be updated with his corrections.

Q. ARE THE COMPANY'S ECONOMIC STUDIES FILED IN 2015 AND 2016 RELEVANT TO THE ISSUE OF PRUDENCY?

A. No. These studies and Mr. Richardson's criticisms of them are not relevant. The Commission has consistently stated that it "is mindful that a Base Load Review Order constitutes a 'final and binding determination that a plant is used and useful for utility purposes'...." Order No. 2009-104(A) at 8. The Commission reiterated this point after reviewing the 2012 study:

> As to the prudency of continuing construction of the Units, the Commission finds that SCE&G has presented evidence establishing that the most prudent, reasonable and beneficial base load resource strategy for it to pursue at this time is to complete construction of the Units as proposed. The evidence shows that it would not be prudent, reasonable or beneficial to SCE&G or its customers to switch to a natural gas resource strategy. ***While this finding is justified by the evidence presented at hearing, this Commission also finds that the BLRA does not require that this issue be relitigated once the initial finding has been made.***"

Order No. 2012-884 at 69 (emphasis added). SCE&G's justification of the project to the Commission led to the 2014 South Carolina Supreme Court decision. *S.C. Energy Users Comm. v. S. C. Elec. & Gas.*

In *S.C. Energy Users*, the South Carolina Supreme Court concurred with the Commission ruling and found that re-justification of the prudence of continuing construction was not required under the BLRA. *See S.C. Energy Users Comm. v. S. C. Elec. & Gas*, 410 S.C. 348, 359-60, 764 S.E.2d 913, 918 (2014). SCE&G nonetheless requested that I continue to update and submit my analyses of the economic justification of the project in each subsequent BLRA proceeding to demonstrate to the Commission and the public that SCE&G continued to monitor the economics of the project and that the project was economically justified at the time of each proceeding. I updated the studies for these reasons and not because updates were required by statute. For those reasons, Mr. Richardson's criticisms of my studies are not germane to any issues before the Commission.

Furthermore, ORS had the opportunity to raise any of the issues Mr. Richardson raises here in the prior proceedings but did not. In all cases, my studies were pre-filed in the record of the relevant proceeding and were subject to discovery. I presented them in my testimony and was subject to cross examination on them. Under the provisions of the BLRA, ORS had the right to retain any expert witnesses it chose to review my work as presented in those proceedings. SCE&G was required to pay their expenses.

Nevertheless, ORS did not raise any challenge to the studies I presented in 2015 or 2016 but instead has waited until the relevant dockets have now been closed for three and two years respectively to challenge these studies. Apart from the benefit of hindsight, there is no reason Mr. Richardson could not have conducted his review and presented his concerns about these studies in a timely way. Nonetheless, I have responded to Mr. Richardson's criticisms, below.

Q. WHAT IS MR. RICHARDSON'S FIRST CRITICISM OF THE 2015 STUDY?

A. Mr. Richardson contends that the Base Load Review Act ("BLRA") revenue (and related income tax) were calculated using an 11% Return on Equity ("ROE") instead of a 10.25% ROE. As a result, Mr. Richardson argues that the benefit of the new nuclear development ("NND") over a gas scenario should be increased by $19.8 million. Furthermore, Mr. Richardson contends that six months of BLRA revenue was not included in the year of service. Thus, Mr. Richardson maintains the NND benefit should be reduced by $22 million. The net effect of these two adjustments, the $19.8 million adjustment and the $22 million adjustment, is a reduction in the levelized value of the nuclear scenario by $2.2 million.

Q. **DO YOU AGREE THAT THE NND BENEFITS SHOULD BE REDUCED BY $2.2 MILLION?**

A. No, I do not. The BLRA revenue actually recovered by SCE&G is calculated based on expenditures covering the period of 12 months ending in each year's month of June with rates then going into effect in October. In contrast, the study based its analysis on the calendar year annual expenditures, which was an appropriate proxy. In addition, the table below compares the actual BLRA revenue to the projected BLRA revenue used in SCE&G's study for the years stated.

	Actual BLRA Revenue ($MM)	Projected BLRA Revenue ($MM)	Difference ($MM)
2015	$380.6	$383.4	$-2.8
2016	$445.0	$522.3	$-77.3

The comparison shows that the forecasted BLRA revenue for purposes of the study was more than the actual. If an adjustment to the NND benefit were to have been made, the adjustment would have gone in the other direction from that suggested by Mr. Richardson.

Furthermore, a ROE of 11% was correct for calculating a return on nuclear CWIP and the income tax effect added 0.25% to the fixed charge rate of the nuclear project which, if undone, would increase the economic advantage of the

NND project. In any event, the adjustment would not have been material to the conclusions of the study.

Q. WHAT IS MR. RICHARDSON'S NEXT CRITICISM OF THE 2015 STUDY?

A. Mr. Richardson argues that the revenues related to capital fixed charges for the years 2047-2054 were inadvertently held constant and that the NND benefit should be increased by $2.1 million.

Q. WHAT IS YOUR OPINION WITH RESPECT TO MR. RICHARDSON'S CONTENTION ON THIS POINT?

A. SCE&G's spreadsheet model was set up to capture 30 years of capital costs, after which the capital costs were held constant for the remaining 10 years. This limitation is not a matter of significant practical concern because of the effect of the net present worth calculations that are an integral part of these studies. Anticipated changes in revenue that far into the future are so heavily discounted in a present worth analysis that only very large end of period effects will cause a significant change in the outcome of the study. That is why Mr. Richardson's recommended increase in the NND benefit is only $2.1 million. However, it should be remembered that this change helps the nuclear scenario and cuts against Mr. Richardson's overall criticism of the decision to continue the project.

Q. WHAT WAS MR. RICHARDSON'S NEXT CRITICISM?

A. Mr. Richardson raised criticisms with the treatment of the Net Accumulated Deferred Income Tax Adjustment ("ADIT"). He maintained that the ADIT adjustment was manually set to derive an NND Project net benefit of exactly $28 million in the base case scenario and that the NND benefit should be reduced by $21.2 million.

Q. DO YOU AGREE WITH THIS CRITICISM?

A. SCE&G's ADIT adjustment was not manually set to derive a result. However, Mr. Richardson is pointing out a flaw in SCE&G's handling of the ADIT adjustment which he explains more precisely when discussing the 2016 economic studies. SCE&G calculated the net ADIT benefits and levelized them to the year of unit operation and failed to discount the result a few more years to the beginning of the study period. I do not have Mr. Richardson's exact calculations, so I cannot attest to the accuracy of Mr. Richardson's recommended adjustment of reducing the NND Project benefit by $21.2 million.

Q. MR. RICHARDSON CLAIMS THAT THE ADIT BENEFIT RELATED TO THE ABANDONMENT COSTS WAS NOT REFLECTED IN THE 2015 STUDY AND THAT THE NND BENEFIT SHOULD BE REDUCED BY $67 MILLION. DO YOU AGREE THAT THIS WOULD HAVE BEEN A VALID REDUCTION?

A. No, I do not. To claim an abandonment loss deduction for income tax purposes, the Company must show that the NND Project was worthless as of the end of the year. The Company is making such a claim in 2017 because of events that occurred during 2017, including the Westinghouse bankruptcy and Santee Cooper's decision to terminate its funding of the project. It is uncertain whether the facts existing as of the end of 2015 or 2016 would have supported the claiming of an abandonment deduction for income tax purposes in either of those years; therefore, it is doubtful whether any ADIT benefit would have been available at that time.

Q. BASED OF MR. RICHARDSON'S RECOMMENDATIONS, NOTWITHSTANDING THE QUESTION OF THEIR APPROPRIATENESS, HOW WOULD SCE&G'S 2015 RESULTS CHANGE?

A. The following table shows the results for the base load scenario filed in 2015.

Base Load	Base Gas	50% gas	100% gas
0 CO2	$28	$144	$248
15 CO2	$97	$210	$326
30 CO2	$166	$278	$392

The total impact of Mr. Richardson's recommendations is a reduction in the NND project benefit of $88.4 million. When you subtract $88.4 million from each cell, the following table results.

Base Load	Base Gas	50% gas	100% gas
0 CO2	($60)	$55	$159
15 CO2	$9	$121	$237
30 CO2	$78	$190	$303

Q. WOULD THE $88.4 MILLION REDUCTION HAVE BEEN SIGNIFICANT ENOUGH FOR YOU TO RECOMMEND IN 2015 THAT SCE&G DEFAULT ON ITS EPC CONTRACT, ABANDON THE NUCLEAR

CONSTRUCTION, AND PURSUE A NATURAL GAS STRATEGY INSTEAD?

A. No. While the Company does not accept these changes as proper, even with an $88.4 million reduction, completing the project remained in the best interest of customers in all of the most likely scenarios. These changes would not have affected the ultimate conclusion of the analysis, which supported continued construction and did so quite strongly.

Q. WHAT WAS MR. RICHARDSON'S NEXT CRITICISM OF THE 2015 STUDY?

A. Mr. Richardson claimed that the 2015 Economic Study should have reflected a two-year delay in the commercial operation dates ("COD") of the nuclear units. This delay would have resulted in a loss of production tax credits ("PTCs"), a reduction of the NND benefits by $91.7 million for the PTCs and an additional reduction of $225 million. According to Mr. Richardson, the total resulting reduction is $316.9 million.

Q. DO YOU AGREE THAT THE 2015 STUDY SHOULD HAVE REFLECTED A TWO-YEAR DELAY AND RESULTED IN A TOTAL REDUCTION OF $316.9 MILLION PRINCIPALLY RELATED TO A LOSS OF FEDERAL PRODUCTION TAX CREDITS?

A. No, for two reasons. First, at the time that these studies were done, the Consortium had committed to complete the Units in time for their output to qualify for the PTCs and was devising mitigation plans to make doing so possible.

SCE&G was holding the Consortium to its commitments. The operative planning assumption was that the PTCs would be earned and that assumption was properly reflected in the analysis. In addition, at the time, SCE&G was actively working in conjunction with Southern Company and the two companies' legislative delegations (which includes South Carolina, North Carolina, Georgia, Alabama, Mississippi and Florida) to have the PTC deadline removed from the federal tax code. SCE&G and Southern Company were making substantial progress in this effort, and in the Federal budget bill adopted on February 9, 2018, the deadline was amended. Had construction continued, the PTC deadline would not have been an issue. Furthermore, irrespective of this fact, SCE&G considered the costs associated with a delay the following year. The result was an increased cost of $84 million per year which is far less than Mr. Richardson's calculation. Attached as ***Exhibit No. ____ (JML-1)*** is SCE&G's response to the ORS data request asking for that calculation.

Q. WHAT CRITICISMS DID MR. RICHARDSON RAISE WITH THE 2016 STUDY?

A. Mr. Richardson claimed that the ADIT calculations in the study were not performed consistently and that the study improperly used a 2016 project start year instead of 2019. According to Mr. Richardson, the NND benefit should be reduced by $31.3 million. (page 8, line 14).

Q. DO YOU AGREE THAT THE ADIT CALCULATIONS WERE NOT PERFORMED CONSISTENTLY AND USED A 2016 PROJECT START

YEAR INSTEAD OF 2019 SO THAT THE NND BENEFIT SHOULD BE REDUCED BY $31.4 MILLION?

A. Yes, I do. As I explained before, when SCE&G calculated the net ADIT value and levelized it for further analysis, we did not discount the levelized value a few more years to state the present value at the start of the study period instead of the project start year. Mr. Richardson's adjustment of reducing the NND Project benefits is appropriate although I cannot attest the amount should be $31.4 million.

Q. **MR. RICHARDSON CLAIMS THAT "BEGINNING WITH THE LYNCH 2016 STUDY, SCE&G ASSUMED THAT THE TRANSMISSION PORTION OF THE NND PROJECT WOULD NOT BE ABANDONED" (PAGE 8, LINE 19) SO THAT THE NND BENEFIT SHOULD BE REDUCED BY $33.7 MILLION. DO YOU AGREE?**

A. No. SCE&G did not consider the transmission portion of the NND Project as a separate part of the project until after Westinghouse declared bankruptcy in 2017.

Q. **MR. RICHARDSON CLAIMS THAT THE ABANDONMENT COSTS WERE INCORRECTLY BASED ON THE END OF THE YEAR, I.E., DECEMBER 2016 (PAGE 9, LINE 3), SO THAT THE NND BENEFIT SHOULD BE REDUCED BY $172.7 MILLION. DO YOU AGREE?**

A. No. The 2016 Economic Study was submitted in Docket No. 2016-223-E. The hearing in this docket was held on October 4, 2016, and the Commission's order was published on November 28, 2016. The study properly incorporates that timing.

Q. WHAT CRITICISMS, IF ANY, DID MR. RICHARDSON RAISE RELATED TO HOW SCE&G CALCULATED CO_2 COSTS?

A. In his testimony, Mr. Richardson claims that SCE&G incorrectly changed how CO_2 costs were handled, that it assumed a rate-based compliance option in the EPA's Clean Power Plan ("CPP"), resulting in the assumption of zero CO_2 costs under the nuclear strategy, and that this assumption was not based on any analysis.

Q. DO YOU AGREE WITH THIS ASSESSMENT?

A. No. Mr. Richardson's testimony does not accurately reflect the analysis and work that was undertaken to develop a state compliance plan responsive to the CPP. On August 3, 2015, the Environmental Protection Agency issued the CPP final rules. Shortly thereafter the South Carolina Department of Health and Environmental Control ("SCDHEC") formed a coalition of stakeholders to work on the state's implementation plan. The coalition included representatives from electric utilities and cooperatives, government agencies, industries, environmental justice and environmental non-governmental organizations. SCE&G developed a constrained optimization model in EXCEL that was used to show that the rate-based compliance option was the best strategy for South Carolina. This EXCEL model was made available to everyone on the task force. The task force disbanded before making a final decision because of court and later administration action that prevented implementation of the CPP as written. Nonetheless, I am certain that the task force would have opted for the rate-based plan given its clear advantages to the State of South Carolina.

Q. WHY IS THAT SO?

A. The reason it was logical to assume the rate-based plan would be adopted is simple to understand. Under the mass-based plan the new nuclear units were excluded from the compliance options, and SCE&G's model showed that the state would hit its emissions cap thereby triggering the need to purchase CO_2 credits or to alter an economic resource plan. Under the rate-based compliance option, the new nuclear units could be included in the state's compliance plan and every MWH generated by a new nuclear unit would equate to one emissions rate credit ("ERC") for the state. The rate formula looks like this:

State Emission Rate = CO_2 Emissions / (MWH Generated + ERCs).

As more ERCs are created, the state's emission rate for compliance would decrease. With two new nuclear units, South Carolina's emission rate would be so low that the state would be a seller of ERCs to other states and would have no compliance costs, only revenues. In the 2016 economic study, rather than reduce the NND benefits as Mr. Richardson suggests, a strong argument could have been made for increasing the benefits to reflect the revenue that would have been expected from the sale of ERCs. Some of this work was documented by the ORS in their report "Energy in Action: South Carolina State Energy Plan

APPENDICES" issued in 2016.[1] Furthermore, attached as ***Exhibit No._____ (JML-2)*** is a chart indicating that at least two-thirds of the states were likely to benefit from choosing the rate-based compliance option. This suggests that there would have been a large market for the trading of ERCs. Since SCE&G would have had an abundance of ERCs generated by the new nuclear capacity, it would be reasonable to increase the NND benefit from the profits of such sales. In any event, there would have been no logic to assuming that South Carolina would have chosen a mass-based plan.

Q. DID MR. RICHARDSON RAISE ANY CONCERNS WITH THE 2017 STUDY?

A. Yes, Mr. Richardson claims that the same four adjustments made to the 2016 study should be made to the 2017 study.

Q. DO YOU AGREE WITH THIS CRITICISM?

A. No, I do not. The only criticism that is valid deals with the discounting of the net ADIT benefit to the start of the study period. Since this would reduce the NND Project benefits, it would only support the decision to abandon the project.

Q. IN CONCLUSION, DO THE CRITICISMS LEVELED AT YOUR STUDIES MATERIALLY CHANGE THE CONCLUSIONS REACHED?

A. No. Issues of hindsight aside, and assuming we knew then what we know now about ways to improve the studies presented from 2008 forward, the

[1] The report is available at: http://energy.sc.gov/energyplan (last accessed October 1, 2018).

criticisms leveled against the planning studies related to the NND Project in no way would have justified a decision to cancel the plants prior to 2017.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

**SOUTH CAROLINA ELECTRIC & GAS COMPANY
OFFICE OF REGULATORY STAFF'S FIRST AUDIT INFORMATION REQUEST
October 15 Amendments to the Engineering, Procurement, and Construction Contract Related to the Construction of a Nuclear Baseload Generation Facility at Jenkinsville, South Carolina**

REQUEST 1-38:

Perform an economic analysis of delay scenarios of 18, 24, 36 and 48 months beyond the forecasted commercial operation dates associated with Order No. 2015-661 and with the Amendment. The delay scenarios should provide estimates for the total project cost as well as the revenue requirements associated with the total project cost that customers may incur both during construction and over the operating lives of the Units.

RESPONSE 1-38:

SCE&G performed an economic analysis of delay scenarios of 18 and 24 months.

Incremental Project Costs for each delay scenario are shown in the table below:

18 month delay for both Units		
	100%	55%
EPC (LD's & Penalty from WEC)	(676,000,000)	(371,800,000)
Owner's Cost	450,000,000	247,500,000
Total Impact to EPC & Owner's Cost	(226,000,000)	(124,300,000)

24 month delay for both Units		
	100%	55%
EPC (LD's & Penalty from WEC)	(676,000,000)	(371,800,000)
Owner's Cost	600,000,000	330,000,000
Total Impact to EPC & Owner's Cost	(76,000,000)	(41,800,000)

Assumptions and results of the study are shown below:

Assumptions:

- 2 Scenarios
  - 18 month delay – Online date 2/28/21, 2/28/22
  - 24 month delay – Online date 8/31/21, 8/31/22

SOUTH CAROLINA ELECTRIC & GAS COMPANY
OFFICE OF REGULATORY STAFF'S FIRST AUDIT INFORMATION REQUEST
October 15 Amendments to the Engineering, Procurement, and Construction Contract Related to the Construction of a Nuclear Baseload Generation Facility at Jenkinsville, South Carolina

- No production tax credits (PTCs) are received
- Purchase capacity to fill the gap at prices based on current RFP responses
- Capital costs decrease
  - 18 month delay – $124,300,000 (55%)
  - 24 month delay – $41,800,000 (55%)
- Model Inputs used are the same as the Nuclear vs. Combined Cycle study, $0 CO_2, Base Gas, Base Loads

Results: Below are the 40-year levelized revenue requirement increases from the base case in Dr. Lynch's Comparative Economic Analysis filed with his direct testimony in Docket No. 2016-223-E.

- 40 Year Levelized NPV Increases(approx.)
  - 18 month delay - $84 M/year
  - 24 month delay – $84 M/year

In all scenarios referenced in Dr. Lynch's direct testimony, the new nuclear option remains competitive with the combined cycle alternative.

Exhibit No.___(JML-2)

About two-thirds of states are advantaged with a rate-based approach to compliance

Rate or mass advantage relative to 2030 state rate and mass goals